Pacific Fishery Management Council
Western Pacific Fishery Management Council
North Pacific Fishery Management Council

8.0 Glossary

Approaching overfishing or a depleted condition – a limit, either fishing mortality or minimum biomass, is projected to be breached within 2 years, based on trends in fishing effort, stock abundance, and other appropriate factors.

Assessment – a stock assessment as defined in section 600.10. Assessments provide quantitative evaluation of a stock's status with respect to the established SDC. Assessments also provide the technical basis for implementing the OY control rule.

Average – the central tendency of a measure over time, including arithmetic mean, median and other appropriate statistics as developed through technical guidance.

Biomass – the total quantity of fish in a stock and is used synonymously with stock abundance. Biomass is usually measured as a total tonnage of fish, but could be in numbers or other units to be synonymous with stock abundance.

Biomass limit (B_{lim}) - the quantity of biomass below which a stock is considered depleted and in need of a rebuilding plan to increase the stock's abundance until it reaches B_{msy}.

Biomass at MSY (B_{msy}) - the same as MSY stock size.

Biomass target - the target biomass of a rebuilding plan (i.e., B_{msy})

Core stock - a stock that is the principal target stock of a fishery and may also include historically important bycatch stocks, highly vulnerable stocks and indicator stocks. Core stocks should have sufficient information available to be managed on the basis of stock-specific SDC and OY control rules, or their proxies.

Depleted - status of a fish stock or stock assemblage whose biomass has been determined to be less than B_{lim} or its proxy. Determination of a depleted status triggers requirement for development of a rebuilding plan.

First year of a rebuilding plan – The first year after a stock is determined to be depleted that a final rule to implement the rebuilding plan becomes effective.

Fishery management plan (FMP) – means a plan developed by a Regional Fishery Management Council or the Secretary of Commerce in the case of Atlantic highly migratory species, to comply with requirements and responsibilities described in the Magnuson-Stevens Act.

Fishery management unit (FMU) – means a list of fish species or stocks in an FMP that have been determined to be in need of conservation and management. These stocks constitute the FMP's set of regulated stocks and are the stocks for which MSY, OY, and SDC are required.

Fishing mortality rate (F) – the rate of mortality imposed on the stock or stock assemblage due to fishing activities. The term F is used to abbreviate fishing mortality rate.

Fishing mortality target (F_{target}) – the level of fishing mortality that corresponds to the OY control rule.

Fishing mortality rate at MSY (F_{msy}) – the target fishing mortality value that should not be exceeded when the biomass for a given stock is rebuilt.

Fishing mortality threshold - a fishing mortality value for a given fish stock that if attained or exceeded in a given fishing year alerts fishery managers that F is approaching F_{lim} for that fishery.

F_{lim} – the same as maximum fishing mortality rate limit.

Generation time – the average age of spawners. This biological factor is related to the time scale for stock rebuilding. It is calculated as the mean age of spawners, under constant recruitment, when experiencing only natural mortality and weighted by the amount of spawn production at each age.

Indicator stock - a core stock that has known SDC for "depleted" or "overfishing" or both that are also used to help manage other species or stocks in a given stock assemblage that has been selected as a representative for a stock assemblage because of similarity in geographic distribution, occurrence in fisheries and life history to other assemblage members. Indicator stocks must have SDC and sufficient data to measure their status relative to their SDC. Indicator stocks should also be managed as a core stock while serving as an indicator for the assemblage.

Limit control rule – the MSY control rule.

Maximum Fishing mortality limit (F_{lim}) – the level of F, on an annual basis, above which overfishing is occurring for a given stock. This level is abbreviated as F_{lim} and is set to be no greater than the MSY control rule.

Maximum fishing mortality threshold (MFMT) - the fishing mortality threshold may be expressed either as a single number or as a function of spawning biomass or other measure of productive capacity. The fishing mortality threshold must not exceed the fishing mortality rate or level associated with the relevant MSY control rule. Exceeding the maximum fishing mortality threshold for a period of 1 year or more constitutes overfishing.

Maximum sustainable yield (MSY) – is calculated as the largest potential long-term average catch or yield that can be taken from a core stock or stock assemblage under prevailing conditions while fishing according to the MSY control rule.

Minimum biomass limit – the level of biomass below which the stock is considered depleted. The default level is ½ B_{msy} and the abbreviated term is B_{lim} should take into account the expected range of natural fluctuation in biomass while fishing according to the MSY control rule and scientific evidence regarding the biomass level below which stock productivity is more impaired.

Minimum stock size threshold (MSST) – the stock size threshold should be expressed in terms of spawning biomass or other measure of productive capacity. To the extent possible, the stock size threshold should equal whichever of the following is greater: One-half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years if the stock or stock complex were exploited at the MFMT. Should the actual size of the stock or stock complex in a given year fall below this threshold, the stock or stock complex is considered overfished.

MSY control rule – a harvest strategy that, if implemented, would be expected to result in a long-term future potential average catch approximating MSY.

Natural mortality rate (M) – the rate at which fish die from non-fishery related causes such as disease and predation. This rate is directly in calculation of generation time, and influences T_{min} and F_{msy}.

Optimum yield (OY) – the amount of fish that (1) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities and taking into account protection of the marine ecosystems; (2) is prescribed on the basis of the maximum sustainable yield from the fishery, as educed by any relevant economic, social, or ecological factor; and (3) in the case of an overfished (e.g., depleted) fishery, that provides for rebuilding to a level consistent with producing the MSY in such fishery.
Overfishing – to fish at a level that jeopardizes the capacity of the stock to produce MSY.
OY control rule – a specified approach to setting the target annual catch or F for each stock or stock assemblage such that overfishing is prevented and OY is achieved for the fishery as a whole.
Rebuilding parameters – B_{msy}, SDC, T_{min}, and T_{max}.
Rebuilding plan – that portion of an OY control rule that addresses the management objective to rebuild a depleted (i.e., currently called "overfished") stock's abundance until it reaches B_{msy} (or its proxy), in as short a time as possible, taking into account the circumstances described under section 304(e)(4)(A) of the Magnuson-Stevens Act. A rebuilding plan should contain: a target time for rebuilding to be completed (T_{target}) based upon a calculation of T_{min} and T_{max}, the stock abundance (B_{msy} or proxy) to be reached before a stock is considered "rebuilt," a control rule that specifies how the target fishing mortality would change during the course of the rebuilding plan, and sufficient information to track progress towards controlling fishing mortality and rebuilding the stock abundance. In the case of a fish stock for which B_{msy} or a proxy is unknown, but F_{lim} or a good estimate is known, a "rebuilding plan" would consist of keeping fishing mortality less than a default value of 75 percent of F_{lim} for two generation times, after which that stock could be considered "rebuilt."
Rebuilding target – the target biomass for rebuilding depleted stocks. This target is set equal to B_{msy}, or suitable proxy.
Rebuilt – status of a stock when an assessment or other analysis finds that a previously depleted stock has at least a 50-percent probability of being at or above B_{msy} in the current year.
Status determination criteria (SDC) - quantifiable factors used to determine if overfishing or stock depletion has occurred. MFMT and MSST are SDC under the current guidelines; B_{lim} and F_{lim} would be SDC under the proposed guidelines.
SDC-known - a fish stock for which one or both SDC (F_{lim} and B_{lim}) are known
Stock abundance – the total quantity of fish in a stock. Used synonymously with biomass in this analysis. Usually measured as total tonnage of fish, but could be in numbers or other units.
Stock assemblage – a group stocks in an FMP, that are sufficiently similar in geographic distribution, co-occurrence in fisheries, and life history so that SDC measured on an assemblage-wide basis or for an indicator stock in the assemblage would satisfy the Magnuson-Stevens Act requirements to achieve OY and prevent overfishing. Most stocks in an assemblage will not have sufficient information to measure stock-specific SDC and will not be important in the sense that core stocks are important.
T_{max} – the latest year that can be used as the target time to rebuild a depleted stock. If T_{min} plus one GT is greater than 10 years, then T_{max} is equal to T_{min} plus one GT; otherwise, T_{max} equals 10 years.

T_{min} – the earliest year with a 50-percent chance that the stock will have rebuilt to B_{msy}. T_{min} is calculated under conditions of zero fishing mortality beginning in the first year of a rebuilding plan.

T_{target} – the year by which there is a 50-percent chance that the stock will have reached B_{msy} while being fished according to the F prescribed in the rebuilding plan. T_{target} is between T_{min} and T_{max}.

Target control rule – OY control rule.

Unknown status - a fish stock for which either B_{lim} or F_{lim} or both are unknown. This includes two situations: (1) the actual numeric level of B_{lim} or F_{lim} or their proxies cannot be calculated, or (2) the numeric level of B_{lim} and F_{lim} or their proxies can be calculated, but the current level of the stock's F or its proxy or biomass or its proxy, is not known relative to the SDC.

9.0 References

Mace, P.M., N. W. Bartoo, A. B. Hollowed, P. Kleiber, R. D. Methot, S. A. Murawski, J. E. Powers, and G. P. Scott. October 2001. Report of the National Marine Fisheries Service National Task Force for Improving Fish Stock Assessments. NOAA Technical Memorandum NMFS-F/SPO-56, 69 p. plus 70 p. in the Appendices.

National Oceanic and Atmospheric Administration. 1999. NOAA Administrative Order 216-6: Environmental Review Procedures for Implementing the National Environmental Policy Act. May 20, 1999.

NOAA Fisheries. December 1996. Magnuson-Stevens Fishery Conservation and Management Act: As Amended Through October 11, 1996. NOAA Technical Memorandum NMFS-F/SPO-23, 121 p.

NOAA Fisheries. August 4, 1997. Proposed Rule for Magnuson-Stevens Act Provisions: National Standard Guidelines. U.S. Federal Register Vol. 62, No. 149: pp. 41907-41920.

NOAA Fisheries. December 29, 1997. Proposed Rule for Magnuson-Stevens Act Provisions; National Standard Guidelines. U.S. Federal Register Vol. 62, No. 248: pp. 67608-67610.

NOAA Fisheries. May 1, 1998. Final rule for Magnuson-Stevens Act Provisions; National Standard Guidelines. U.S. Federal Register Vol. 63, No. 84: pp. 24212-24237.

NOAA Fisheries. August 16, 2000. Guidelines for Economic Analysis of Fishery Management Actions. 59p.

NOAA Fisheries. February 14, 2003. Advance Notice Of Proposed Rulemaking for Fisheries of the United States; National Standard 1. U.S. Federal Register Vol. 68, No. 31: p.7492.